

AB
--A linear motor includes a magnet, a coil, and a jacket having an inside member that is comb-shaped having teeth, extending along a driving direction. The coil is engaged by the teeth of the comb-shaped member. A cooling medium flows through an inside space enclosed by the jacket. Unwanted deformation or breakage of the jacket can be avoided even if the pressure of the cooling medium is enlarged or the thickness of a small-thickness portion of the jacket is made smaller. A higher cooling efficiency is thus attainable by increasing the flow rate of the cooling medium.--

IN THE CLAIMS

Please amend Claims 1-9, 13, and 15-19 as follows. A marked-up copy of Claims 1-9, 13, and 15-19 showing the changes made thereto, is attached. Note that all the claims currently pending in this application, including those not presently being amended, have been reproduced below for the Examiner's convenience.

AG
SUB
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CONT.
1. (Amended) A linear motor, comprising:
a magnet;
a coil; and
a jacket having an inside member that is comb-shaped and having teeth, extending along a driving direction, wherein the coil is attached to said jacket while being sandwiched by the comb-shaped member with respect to the driving direction and wherein a cooling medium flows through an inside space enclosed by said jacket.

2. (Amended) A linear motor according to Claim 1, wherein said comb-shaped member includes base portions provided on mutually opposed inside faces of said jacket and formed in parallel to the driving direction and opposed to each other, and a pillar-like portion for connecting said base portions, wherein the coil is supported by said base portions in a floating manner while it is held fixed by said pillar-like portion with respect to the driving direction.

3. (Amended) A linear motor according to Claim 1, wherein said linear motor includes a plurality of coils arrayed along the driving direction partially overlapping each other, wherein each coil has a bent end portion to avoid mutual interference of the partially overlapped portions of the coils, and wherein the coils are disposed with their central portions placed substantially at the same level.

4. (Amended) A linear motor according to Claim 3, wherein said jacket has a central portion of small thickness and a recessed portion on the outside of said jacket, wherein the bent end portions of the coils are disposed at the recessed portion, and wherein the central portion is reinforced by the recessed portion.

5. (Amended) A linear motor according to Claim 1, wherein said jacket serves as a guide for an element driven by said linear motor.

6. (Amended) A stage system, comprising:
a movable stage;

a linear motor having a magnet and a coil, for driving said stage; and
a jacket having an inside member that is comb-shaped having teeth, extending along a driving direction, wherein the coil is attached to said jacket while being sandwiched by the comb-shaped member with respect to the driving direction and wherein a cooling medium flows through an inside space enclosed by said jacket.

7. (Amended) An exposure apparatus, comprising:

a movable stage for holding a substrate thereon;

a linear motor having a magnet and a coil, for driving said stage; and

a jacket having an inside member that is comb-shaped having teeth, extending along a driving direction, wherein the coil is attached to said jacket while being sandwiched by the comb-shaped member with respect to the driving direction and wherein a cooling medium flows through an inside space enclosed by said jacket.

8. (Amended) A device manufacturing method, comprising the steps of:

applying a photosensitive material onto a substrate;

exposing the substrate by use of an exposure apparatus including a movable stage for holding a substrate thereon, a linear motor having a magnet and a coil, for driving said stage, and a jacket having an inside member that is comb-shaped having teeth, extending along a driving direction, wherein the coil is attached to said jacket while being sandwiched by the comb-shaped member with respect to the driving direction and wherein a cooling medium flows through an inside space enclosed by said jacket; and

developing the exposed substrate.

9. (Amended) A linear motor according to Claim 1,
wherein said jacket has a reinforcement portion extending parallel to a driving direction,
wherein said coil is enclosed by said jacket and wherein a cooling medium flows through an
inside space of said jacket.

10. (Unamended) A linear motor according to Claim 9, wherein said reinforcement
portion is formed on an outside face of said jacket.

11. (Unamended) A linear motor according to Claim 9, wherein said reinforcement
portion is formed at a position not interfering with relative motion of said magnet and
said coil.

12. (Unamended) A linear motor according to Claim 9, wherein said reinforcement
portion is made of one of aluminum, ceramics and resin.

13. (Amended) A linear motor according to Claim 9, wherein said reinforcement portion
is made integral with said jacket, and wherein said reinforcement portion is defined by a portion
having a protruded shape with respect to a portion of said jacket where said magnet and said coil
are opposed to each other.

14. (Unamended) A linear motor according to Claim 13, wherein said jacket and said
reinforcement portion being integral with each other are made of one of ceramics and resin.

15. (Amended) A linear motor according to Claim 13, wherein the protruded shape portion of said jacket is spaced from said coil.

16. (Amended) A linear motor according to Claim 9, wherein at least one of an upper half and a lower half of a section of said jacket taken along a plane perpendicular to the driving direction has a recessed portion.

17. (Amended) A stage system, comprising:

a movable stage; and

a linear motor according to Claim 1, wherein said jacket has a reinforcement portion extending parallel to a driving direction, wherein said coil is enclosed by said jacket and wherein a cooling medium flows through an inside space of said jacket.

18. (Amended) An exposure apparatus, comprising:

a movable stage for holding a substrate thereon; and

a linear motor according to Claim 1, wherein said jacket has a reinforcement portion extending parallel to a driving direction, wherein said coil is enclosed by said jacket and wherein a cooling medium flows through an inside space of said jacket.

19. (Amended) A device manufacturing method, comprising the steps of:

applying a photosensitive material onto a substrate;

exposing the substrate by use of an exposure apparatus having a movable stage for holding a substrate thereon, and a linear motor according to Claim 1, wherein the jacket has a

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cont.

reinforcement portion extending parallel to a driving direction, wherein said coil is enclosed by said jacket and wherein a cooling medium flows through an inside space of said jacket; and developing the exposed substrate.

Please add new Claims 20-26 as follows:

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cont.

--20. (New) A linear motor, comprising:

a magnet;

a coil; and

a coil holding member having plurality of protrusions formed, in a comb-shape, along a direction of relative movement between said magnet and said coil, wherein said coil is attached to said coil holding member while being sandwiched by said protrusions along the relative movement direction.

21. (New) A linear motor according to Claim 20, wherein said coil has an inside void in which a portion of another coil is placed.

22. (New) A linear motor according to Claim 20, wherein said coil has an inside void in which plural protrusions of said coil holding member are disposed along the relative movement direction.

23. (New) A linear motor according to Claim 20, wherein said coil holding member surrounds said coil, and wherein a temperature controlling medium is supplied into said coil holding member.

24. (New) A stage system, comprising:

a linear motor as recited in Claim 20; and

a stage to be driven by said linear motor.

25. (New) An exposure apparatus, comprising:

a stage system as recited in Claim 24; and

an optical system for illuminating a substrate to be conveyed by said stage system.

26. (New) A device manufacturing method, comprising the steps of:

applying a photosensitive material to a substrate;

exposing the substrate by use of an exposure apparatus as recited in Claim 25; and

developing the exposed substrate.--

REMARKS

Summary of patentability issues

Amended independent Claims 1, 6, 7, and 8 recite at least one feature not disclosed or suggested by the patent to Kamata, et al. Therefore, is the outstanding rejection of these claims over this patent still proper?

Status of the claims